AMENDMENTS TO THE DRAWINGS

FIGS. 1-6 have been amended to address the objections.

Attachment: 6 Replacement Sheet(s)

REMARKS

This Amendment, filed in reply to the Office Action dated November 19, 2010, is believed to be fully responsive to each point of objection and rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

As of the Office Action of November 19, 2010, claims 1-11 are all the claims under examination on the merits and all are rejected.

With this response, claim 4 is amended to correct a typographical error.

No new matter is added by way of this amendment. Entry and consideration of this amendment are respectfully requested.

Information Disclosure Statement

The Examiner states several of the cited JP patent applications in the IDS of August 17, 2007 were not considered because the listing was not referenced with a proper author, assignee or inventor.

Applicants submit herewith a Supplemental IDS that corrects the inventor/assignee designation. Consideration of the references is now requested.

Specification

The Examiner objected to the Abstract as being overly broad. Accordingly, Applicants submit a revised Abstract that provides a more specific description of Applicants' invention.

Drawings

The Examiner objects to the Drawings as failing to comply with the provisions set forth in 37 C.F.R. 1.121 (d). Applicants submit herewith corrected Drawings.

Claim rejections - 35 U.S.C. § 112 - Written Description

1) Rejection of claim 5

Claim 5 is rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement. The Examiner contends Applicant's disclosure fails to provide sufficient description of the generic enantioselective pore of claim 5.

On page 4 of the Office Action, the Examiner points to paragraph [0044] of Applicant's published U.S. Patent Application 2009/0182137 that states:

> "In addition, it is preferred for the pore unit to form an enantioselective pore. An example of an enantioselective pore unit is maltoporin (Danelon et al., see above). In addition, by the incorporation of suitable amino acids, transmembrane proteins or their transmembrane structures which were previously not enantioselective can be rendered enantioselective. Furthermore, it is to be expected that further enantioselective transmembrane proteins will be found. The use of an enantioselective transmembrane protein or of an enantiomeric transmembrane structure in a pore unit (or as the pore unit) of a vesicle having a membrane containing amphiphilic copolymers is likewise preferred."

According to the Examiner, claim 5 allegedly lacks adequate written description because disclosure of a single species, i.e. maltoporin, does not provide sufficient written description for a person of ordinary skill to conclude the Applicant was in possession of the genus of membrane proteins having an enantioselective pore. The Examiner also remarks he was unable to find any evidence in the literature for other proteins with enantioselective pores.

Applicants respectfully disagree with the Examiner.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. (MPEP 2163; *Moba, B.V. v. Diamond*

Automation, Inc., 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116.

With respect to the written description of a genus, MPEP 2163 states:

> "A patentee will not be deemed to have invented species sufficient to constitute the genus by virtue of having disclosed a single species when the evidence indicates **ordinary artisans could not predict the operability in the invention of any species other than the one disclosed**." In re Curtis, 354 F.3d 1347, 1358, 69 USPQ2d 1274, 1282 (Fed. Cir. 2004) . . . **On the other hand, there may be situations where one species adequately supports a genus**. See, e.g., In re Rasmussen, 650 F.2d 1212, 1214, 211 USPQ 323, 326-27 (CCPA 1981) (emphasis added).

Hence, disclosure of a single species does not preclude support for the entire genus.

Contrary to the assertions made by the Examiner, the art at the time of Applicants' filing was replete with examples of membrane proteins having enantioselective pores. Applicants submit the following exemplary list of references[2]:

Enantioselective transport:

Damaj et al. Mol Pharmacol. 2004 Sep; 66(3):675-82: Enantioselective effects of hydroxy metabolites of bupropion on behavior and on function of monoamine transporters and nicotinic receptors.

Sugar transport systems:

Andrews KJ, Lin EC. Fed Proc. 1976 Aug;35(10):2185-9: Selective advantages of various bacterial carbohydrate transport mechanisms (Abstract).

Heavy metal transport systems:

[2] In accordance with M.P.E.P. 609(c), the documents cited herein in support of Applicants' remarks are being submitted as evidence directed to an issue raised in the Official Action, and no fee pursuant to 37 C.F.R. 1.97 or 1.98, or citation on a FORM PTO/SB/08 or PTO-1449 is believed to be necessary.

Bevers et al. J Bacteriol. 2006 Sep; 188(18):6498-505: Tungsten transport protein A (WtpA) in Pyrococcus furiosus: the first member of a new class of tungstate and molybdate transporters.

Degen et al. Arch Microbiol. 1999 Feb; 171(3):139-45: Selective transport of divalent cations by transition metal permeases: the Alcaligenes eutrophus HoxN and the Rhodococcus rhodochrous NhlF. (Abstract)

Nucleoside transporters:

Elwi et al. Biochem Cell Biol. 2006 Dec; 84(6):844-58: Renal nucleoside transporters: physiological and clinical implications.

Anion transport:

Davis et al. Chem Soc Rev. 2010 Oct;39(10):3843-62: Recent advances in the transmembrane transport of anions (Abstract; reviews publications starting in 2007).

Applicants assert a person of ordinary skill would understand from Applicants' disclosure that Applicant was indeed in possession of a protein with the enantioselective pore of claim 5. Applicants also assert that the maltoporin pore is representative of the genus of enantioselective pores known in the art as of the time of Applicants' filing.

Applicants therefore respectfully request that the rejection of claim 5 under 35 U.S.C. § 112, 1st paragraph be withdrawn.

2) Rejection of claims 1-4 and 6-11

Claims 1-4 and 6-11 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The Examiner states claims 1-4 and 6-11 specifically encompass, or specifically require a pore which allows nucleic acids to traverse

a membrane. For example, claim 6 allegedly requires a positively charged oligomer for binding the substance, which may be polylysine (Claim 7), and the substance to be bound is a nucleic acid (Claim 9), and the substance released is a nucleic acid (Claim 11).

According to the Examiner, the specification only provides FhuA as a channel for such nucleic acids to traverse and the Art allegedly provides no more channels which fit into liposomes. The Examiner then states the Artisan would not have understood Applicant to have been in possession of a generic nucleic acid pore, which is required to be present, or specifically encompassed, by the claims.

a) Rejection of claims 1-4 and 6-8

Applicants disagree with the Examiner for the following reasons.

First, the Examiner's rejection as to claims 1-4 and 6-8 is improper because the Examiner is reading limitations from the specification into the claims. A specification is required to describe specific examples or preferred embodiments that fall within the scope of the patent claims, but are not coextensive with them. In other words, the **details of these preferred embodiments do not limit the scope of the claims *unless the claims so require***.

In this regard, section II of MPEP 2111.01 specifically states:

> ". . . **a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment**." *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875, 69 USPQ2d 1865, 1868 (Fed. Cir. 2004) See also *Liebel-Flarsheim Co. v. Medrad Inc.*, 358 F.3d 898, 906, 69 USPQ2d 1801, 1807 (Fed. Cir. 2004) (discussing recent cases wherein **the court expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment**)." (Emphasis added)

The CAFC in *In re Prater* eloquently illustrated this point by stating:

> "reading a claim in light of the specification, to thereby interpret limitations **explicitly recited in the claim**, **is a quite different thing from 'reading limitations of the specification into a claim**,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." (*In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)). (Emphasis added)

Contrary to the assertions made by the Examiner, claims 1-4 and 6-8 do **not** recite a requirement that the pore allow for nucleic acids to traverse the membrane. Moreover, the specification as filed, provides ample written description for the "pore-forming unit" of claim 1 and claims dependent therefrom. For example, at lines 17-28 on page 7 and at lines 1-4 on page 8, the specification as filed states:

> "Particular preference is given to those vesicles whose pore unit contains a protein or a protein part selected from the group consisting of
>
> a) a pore-forming transmembrane protein,
>
> b) a pore-forming transmembrane protein having an alpha-helical transmembrane structure, in particular alamethicin, melittin, magainin, dermaseptin,
>
> c) **a pore-forming transmembrane protein having a beta-barrel transmembrane structure, in particular Rhodobacter capsulatus porin, Rhodopseudomonas blastica porin, Omp, ScrY, FepA, PhoE and, in particular for substances having a molecular weight <1000 Da, OmpF, LamB, OmpK36 and for substances having a molecular weight>1000 Da FhuA, TOlC, maltoporin and alpha-haemolysin,**
>
> d) a transmembrane structure of a pore-forming transmembrane protein, and
>
> e) a protein having a structure that is structurally homologous to a pore-forming transmembrane structure of one of the proteins according to a), b), c) and/or d)." (Emphasis added)

Hence, the specification as filed provides sufficient written description of the "pore unit" of claim 1 for a person of ordinary skill in the art to conclude that the Applicant was in possession of the claimed invention as of Applicant's filing date.

b) Rejection of claims 9-11

With respect to the rejection of claims 9-11, these claims require either

- the contacting of a nucleic acid with a vesicle, or
- the binding of a nucleic acid in a vesicle.

According to the Examiner, the specification only provides FhuA as a channel for such nucleic acids to traverse and the Art allegedly provides no more channels which fit into liposomes.

Applicants disagree with the Examiner for the following reasons.

i) ***The Examiner improperly reads limitations from the specification into the claims***

Currently pending claims 9-11 require:

> **9.** **(Previously presented):** The method of binding a substance according to claim 8, wherein the substance to be bound is a nucleic acid.
>
> **10.** **(Previously presented):** A method of binding a nucleic acid, comprising contacting a nucleic acid with the vesicle of claim 1 or 2.
>
> **11.** **(Previously presented):** A method of releasing a nucleic acid, comprising the steps of:
> a) binding a nucleic acid in a vesicle by contacting the nucleic acid with the vesicle of claim 1 or 2, and
> b) then releasing the bound nucleic acid from the vesicle by applying a shear stress to the vesicle and/or dissolving the vesicle and/or by adding a salt.

None of these claims requires that the "pore-forming unit" of claim 1 be limited to FhuA. The Examiner is, once again, improperly importing preferred embodiments from the specification to limit the scope of the claims.

ii) ***Applicant's pore forming unit is capable of transferring nucleic acids across a vesicle membrane***

The Examiner alleges the specification "only provides FhuA as a channel for such nucleic acids." This is also incorrect.

At lines 17-28 on page 7 and at lines 1-4 on page 8, the specification as filed states:

> "Particular preference is given to those vesicles whose pore unit contains a protein or a protein part selected from the group consisting of . . . . . c) **a pore-forming transmembrane protein having a β-barrel transmembrane structure**, in particular Rhodobacter capsulatus porin, Rhodopseudomonas blastica porin, Omp, ScrY, FepA, PhoE and, in particular for substances having a molecular weight <1000 Da, OmpF, LamB, OmpK36 and **for substances having a molecular weight >1000 Da FhuA**, TOlC, maltoporin and alpha-haemolysin, ..." (Emphasis added)

At lines 11-15 on page 10, the specification as filed states:

> "A particularly preferred pore unit is the FhuA channel-forming protein or a protein having the β-barrel domain thereof or having a structure that is structurally homologous thereto. This protein has high temperature stability (up to about 60°C), **it permits the transport of phage DNA** into the vesicle interior, and it is expressable in conventional host cells, for example in E. coli. . .." (Emphasis added)

At lines 28-30 on page 10 and lines 1-6 on page 11, the specification as filed states:

> ". . . Pore units having corresponding pore diameters can be produced particularly simply by means of β barrel structures of known proteins, as just shown with reference to the particularly preferred **example** of the FhuA protein. In addition, **corresponding pore units allow not only small atoms and molecules but also larger molecules, in particular nucleic acids such as DNA and RNA, to pass into the interior of the vesicles according to the invention**. Corresponding pore units are therefore preferably used according to the invention to separate a nucleic acid, in particular a DNA and/or a RNA." (Emphasis added)

Contrary to the assertions made by the Examiner, it is clear from the above-cited paragraphs of the specification that a "pore-forming unit" capable of transferring DNA across the vesicle membrane is **not** limited to FhuA.

For example, at lines 26-27 on page 7, the specification as filed cites "FhuA, TOlC, maltoporin and alpha-haemolysin" and derivatives thereof as pore forming units for **substances >1000 Da**. Applicants therefore infer these pore forming units are capable of transferring substances having a molecular weight >1000 Da across the vesicle membrane, including nucleic acids.

iii) Applicants were in possession of a generic pore forming unit as of Applicant's filing date

The Examiner alleges the specification provides insufficient written description for the genus of pore-forming units capable of transferring a nucleic acid across a vesicle membrane.

On the contrary, Applicants assert the disclosure at lines 17-28 on page 7 and at lines 1-4 on page 8, at lines 11-15 on page 10 and at lines 28-30 on page 10 and lines 1-6 on page 11 provides sufficient written description of pore-forming units capable of transferring substances with a molecular weight greater than 1000 daltons, including nucleic acids. A person of ordinary skill would therefore conclude the Applicant was in possession of the genus of pore-forming units, including those capable of transferring nucleic acids across a vesicle membrane, as of the time of Applicant's filing.

B. Claim rejections - 35 U.S.C. § 103 - Obviousness

I. ***Claims 1-4 and 8 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over WO 2003/106589 to Anderson; and WO 01/32146 to Meier, et al. (hereinafter referred to as Anderson and Meier respectfully)***

According to the Examiner, Anderson teaches nanoporous particles with a retained target that can be used in chemical isolation or cleanup. Anderson allegedly teaches a chemical that diffuses within the porous nanostructured liquid or liquid crystalline particle or material where it binds to a target which retains the chemical within the nanoporous particle. The Examiner contends the chemical can bind to the target and be held within the nanoparticle and isolated from the bulk media.

According to the Examiner, Meier teaches vesicles made of amphiphilic tri-block

copolymers and that molecules, such as membrane proteins, may be incorporated into the walls of the nanocapsules. The Examiner contends the nanocapsules may also contain a gating function protein, e.g., porins. Meier allegedly teaches at least one use for these vesicles includes removal of contaminants.

The Examiner then concludes the Artisan would be aware that a vesicle could be made similar to Meier, and containing an internally-linked ligand which binds to a target molecule, and containing pores large enough to diffuse a target molecule. It would therefore allegedly be obvious to an artisan to combine the teachings of Anderson and Meier and there would have been a reasonable expectation of success, as the various components are utilized for art-recognized purposes.

Applicants respectfully traverse the rejection because the Office failed to establish a *prima facie* case of obviousness for the following reasons.

1) The combination of the teachings of Anderson and Meier would give unpredictable results

In determining obviousness, the law requires an analysis of the underlying factual inquiries including,

(1) determining the scope and content of the prior art;

(2) ascertaining the differences between the claimed invention and the prior art; and

(3) resolving the level of ordinary skill in the pertinent art.

In the wake of the decision by the Supreme Court in *KSR International Co. v. Teleflex Inc.*, the Office also established Guidelines that should be followed in making an obviousness determination. The Guidelines indicate a rationale must be set forth as to why the claimed

invention is obvious. The Guidelines indicate the following rationales are indicative of obviousness:

(a) combining prior art elements according to known methods to yield **predictable** results;

(b) simple substitution of one known element for another to obtain **predictable** results;

(c) use of a known technique to improve similar devices (methods, or products) in the same way;

(d) applying a known technique to a known device (method, or product) ready for improvement to yield **predictable** results;

(e) ''Obvious to try''—choosing from a finite number of identified, **predictable** solutions, with a reasonable expectation of success;

(f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been **predictable** to one of ordinary skill in the art;

(g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Thus, according to the Guidelines, **predictability** is a key determinant in an obviousness analysis, particularly in an unpredictable art such as biotechnology.

Anderson teaches on page 7, lines 9-25:

> "It is an object of the invention to provide a separation or segregation device made of **a porous nanostructured material**, preferably **cubic phase**, which includes a target positioned therein, preferably at least 90% partitioned into the porous nanostructured material, which can be used in chemical separations, assays, therapeutic drug delivery, and in other applications. **Preferably the**

nanostructured material is lyotropic meaning that it is comprised of a **liquid phase or liquid crystalline phase material** that contains a solvent. However, thermotropic materials, which do not include a solvent, might also be employed in the practice of this invention. For example, **anhydrous strontium soaps**, and soaps with other divalent counterions, over certain temperature ranges, are known to form cubic phases which are **bicontinuous** in the sense that the polar groups and counterions form the continuous polar domains, while the alkane chains form continuous apolar domains. Similarly, **block copolymers** (e.g., polystyrene-b-polyisoprene star diblock copolymers) are known to form bicontinuous cubic phases with the same morphologies as found in lipid-water systems." (Emphasis added)

The composition of these particles is described on page 22, lines 22-27, which states:

"The liquid crystalline particles may be constructed from the following types of materials: **surfactants, polar lipids** (phospholipids, glycolipids, sphingolipids, etc.), **block copolymers** (particularly amphiphilic bock copolymers), etc." (Emphasis added).

A surfactant is defined on page 26, lines 14-24 that states:

"**A surfactant is an amphiphile** that possesses two additional properties. First, it **significantly modifies the interfacial physics of the aqueous phase** (at not only the air-water but also the oil-water and solid-water interfaces) at unusually low concentrations compared to non-surfactants. Second, surfactant molecules **associate reversibly with each other (and with numerous other molecules)** to a highly exaggerated degree to form thermodynamically stable, macroscopically one-phase, solutions of aggregates or **micelles**." (Emphasis added)

An amphiphile is defined on page 26, lines 6-7 as:

"an amphiphile can be defined as a compound that contains both a hydrophilic and a lipophilic group."

Meier teaches:

"**Vesicles** made from **amphiphilic copolymers** . . . . The amphiphilic copolymers can be ABA copolymers, where one of A and B is **hydrophilic** and the other is **hydrophobic**. AB copolymers can also be used. . . . . Molecules, such as **membrane proteins**, can be incorporated into the wall of the vesicles or nanocapsules. (Emphasis added)

Contrary to the Examiner's allegations, a person of ordinary skill in the art at the time of Applicant's filing would not be motivated to combine Anderson's cubic phase liquid crystalline

particles (known in the art as "cubosomes", see below) with Meier vesicles of amphiphilic copolymers because the results of such a combination are entirely unpredictable, if not inoperable.

In his 2005 review entitled "Cubosomes: Bicontinuous Cubic Liquid Crystalline Nanostructured Particles, Spicer[3] comments on page 1, lines 21-23:

> "Bicontinuous cubic phases are optically isotropic, **very viscous**, solid-like liquid crystals with cubic crystallographic symmetry." (Emphasis added)

Thus, the solid bicontinuous cubic phase is evidently incompatible with encapsulation by Meier's vesicles.

Lines 41-47 then state:

> ". . . An intriguing property of the cubic phases formed by certain classes of amphiphiles is their ability to be dispersed into particles, termed **cubosomes**. Cubosomes are **liquid crystalline nanostructured particles** with the same unique properties of the bulk cubic phase, although cubosome dispersions have **much lower viscosity**." (Emphasis added)

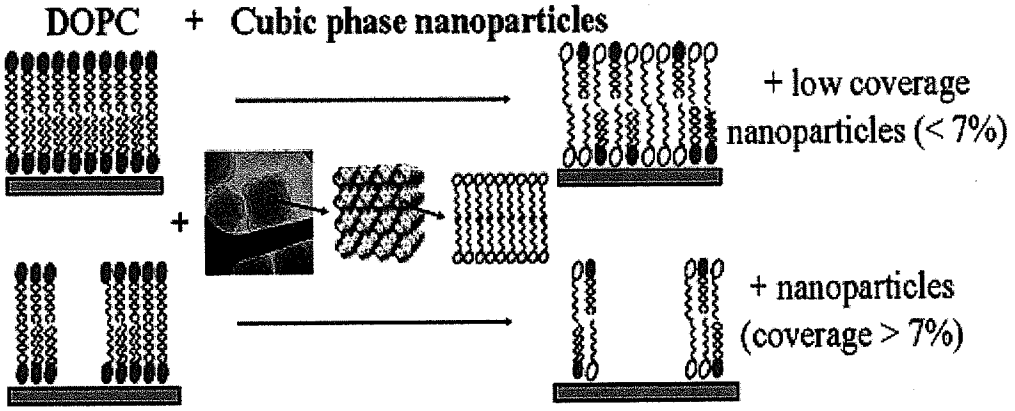
On page 7 in the section entitled 'Applications,' Spicer then states:

> "Cubic phase is attractive for controlled release because of its small pore size (ca. 5–10 nm); **its ability to solubilize hydrophobic, hydrophilic, and amphiphilic molecules**; and its biodegradability by simple enzyme action. Cubic phase is strongly **bioadhesive**. . . .."

The Spicer 2005 review would therefore alert a person of ordinary skill to the possibility that Anderson's liquid crystalline particles made up of surfactants, polar lipids or block copolymers could adversely interact with and even 'solubilize' the amphiphilic bilayer of Meier's vesicles.

[3] *Spicer*, P., "Progress in Liquid Crystalline Dispersions: ***Cubosomes***, " Curr. Opin . Colloid Int. Sci., 10, 274-79 (2005).

This adverse interaction was subsequently confirmed in 2009 by Vandoolaeghe et al.[4] who clearly demonstrated, as depicted below, **that the strong adsorption of certain species of cubosome particles onto the lipid bilayer results in the interfacial exchange of materials between the dispersed particles and the supported lipid bilayer:** the cubosome particles expel MO[5] to the bilayer, whereas the investigated phospholipid (dioleoylphosphatidlycholine) moves from the bilayer to the particles. . . .."



Anderson reference also states on page 38, lines 12-22:

"The **nanostructured liquid phase** material may be formed from:
a. a polar solvent and a surfactant or
b. a polar solvent, a surfactant and an amphiphile or hydrophobe or
c. a block copolymer or
d. a block copolymer and a solvent.

The **nanostructured liquid crystalline phase material** may be formed from:
a. a polar solvent and a surfactant.
b. a polar solvent, a surfactant and an amphiphile or hydrophobe, or
c. a block copolymer or
d. a block copolymer and a solvent." (Emphasis added)

On page 41, Anderson states:

[4] Pauline Vandoolaeghe, Adrian R. Rennie, Richard A. Campbell and Tommy Nylander Neutron Reflectivity Studies of the Interaction of Cubic-Phase Nanoparticles with Phospholipid Bilayers of Different Coverage. Langmuir, 2009, 25 (7), pp 4009–4020. (Abstract)
[5] MO: monoolein

" . . . Other preferred lipids include glycerol **monooleate** (or other long-chain unsaturated monoglycerides) . . ." (Emphasis added).

Applicants therefore conclude the outcome of the combination of Anderson with Meier would be highly unpredictable and, hence non-obvious, because cubosomes of surfactants, polar lipids or block copolymers interact unpredictably with the amphiphilic bilayer of Meier's vesicles.

2) The combination of the teachings of Anderson and Meier teaches away from Applicant's invention

It is well-settled law that a *prima facie* case of obviousness may be rebutted by showing that the art teaches away from the claimed invention. See In re Geisler, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997). Further, relevant law holds that a reference teaches away when a person of ordinary skill in the art, upon reading it, would be discouraged from following the path set out in the reference, or would be led in a path divergent from the path taken by the inventor. See Monarch Knitting Mach. Corp v. Sulzer Morat Gmbh, 139 F.3d, 877, 45 USPQ2d 1977 (Fed. Cir. 1998); Para-Ordnance Mfg. v. SGS Importers Int'l Inc., 73 F.3d1085, 37 USPQ2d 1237 (Fed. Cir. 1995); and In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

On page 26, lines 14-24 Anderson states:

"**A surfactant is an amphiphile** that possesses two additional properties. First, it **significantly modifies the interfacial physics of the aqueous phase** (at not only the air-water but also the oil-water and solid-water interfaces) at unusually low concentrations compared to non-surfactants. Second, surfactant molecules **associate reversibly with each other (and with numerous other molecules)** to a highly exaggerated degree to form thermodynamically stable, macroscopically one-phase, solutions of aggregates or **micelles**." (Emphasis added)

On page 40, lines 5-29 and page 41, lines 1-26, Anderson recites a list of suitable surfactants, including known **detergents such as sodium dodecyl sulfate**, that may be

incorporated into the liquid crystalline nanostructured particles. A person of ordinary skill would know surfactants may also act as: wetting agents, emulsifiers, foaming agents, and dispersants. Applicants contend the close association of a surfactant with Meier's vesicles would compromise the integrity of the amphiphilic bilayer. The combination of Anderson and Meier therefore teaches away from Applicant's invention because the combination would be inoperative.

3) A person of ordinary skill at the time of Applicant's filing would not have any reason or motivation to combine the teachings of Anderson with Meier.

Applicants assert a person of ordinary skill would be disinclined to combine the teachings of Anderson with those of Meier because Anderson accomplishes the stated goal of separating target molecules from a solution without any need for encapsulation in Meier's vesicles. On the contrary, a person's common sense would indicate Anderson's liquid or liquid crystalline nanostructured particles could be incompatible with Meier's vesicles because the particles either share a common chemical composition that would increase the likelihood the particles and the vesicle bilayer may interact or the particle comprises a surfactant that could disrupt the bilayer. In either instance, there would be no reason to combine the references.

The Examiner has therefore failed to make a *prima facie* case of obviousness.

II. Other 103 rejections based on the combination of Anderson with Meier

The Examiner proceeds to enumerate 4 other 103 rejections based on the initial rejection in view of Anderson and Meier.

Claims 1-5 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/106589 to **Anderson**; and WO 01/32146 to **Meier, et al**., as applied to claims 1-4 and 8 above, and further in view of Danelon, et al. (2003) Journal of Biological Chemistry, 278(37):

35542-51.

Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/106589 to **Anderson**; and WO 01/32146 to **Meier, et al.,** as applied to claims 1-4 and 8, above, and further in view of Locher, et al. (1998) Cell, 95: 771-78 and Cotton, et al. (2001) Current Protocols in Human Genetics, Chapter 12, Unit 12.3, Supplement 11, Wiley Online Library, 12.3.1-12.3.33, John Wiley & Sons, Inc.

Claims 1-5 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/106589 to **Anderson**; and WO 01/32146 to **Meier, et al**., and Danelon, et al. (2003) Journal of Biological Chemistry, 278(37): 35542-51, as applied to claims 1-5 and 8 above, and further in view of U.S. Patent No. 6,958,160 to Keller, et al. and Hansen, et al. (December 2002) Journal of the American Society for Mass Spectrometry, 13(12): 1376-87.

Claims 1-4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/106589 to **Anderson**; and WO 01/32146 to **Meier, et al**., Locher, et al. (1998) Cell, 95: 771- 78 and Cotton, et al. (2001) Current Protocols in Human Genetics, Chapter 12, Unit 12.3, Supplement 11, Wiley Online Library, 12.3.1-12.3.33, John Wiley & Sons, Inc., as applied to claims 1-4 and 6-11, above, and further in view of U.S. Patent No. 6,958,160 to Keller, et al. and Hansen, et al. (December 2002) Journal of the American Society for Mass Spectrometry, 13(12): 1376-87.

Applicants respectfully traverse each of these rejections for the following reasons.

None of the additional references remedies the deficiencies of Anderson in view of Meier.

All these 35 U.S.C. §103 rejections are based on the initial 35 U.S.C. §103 rejection in view of Anderson and Meier. The additional references teach the following:

- Danelon et al. (2003) refers to the study of maltoporin in black lipid membranes.
- Locher, et al. (1998) Cell, 95: 771-78 teaches transmembrane signaling across the ligand-gated FhuA receptor.
- Cotton, et al. (2001) teaches the preparation of Adenovirus-polylysine DNA complexes
- U.S. Patent No. 6,958,160 to Keller, et al. describes the preparation of liposome suspensions and uses thereof.
- Hansen, et al. (December 2002) teaches the incorporation of the M2 influenza A protein into lipid vesicles.

Thus, none of the references in the combinations designated by the Examiner is able to remedy the deficiencies of Anderson in view of Meier.

The Examiner has therefore failed to make a *prima facie* case of obviousness.

CONCLUSION

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: May 19, 2011